WHAT IS CLAIMED IS:

1. A method for patterning dielectric layers on semiconductor substrates, comprising at least the steps of:

providing a first layer,

depositing at least one layer formed from a dielectric on the first layer, so that a dielectric layer is obtained;

depositing a photosensitive resist layer on the dielectric layer;

exposing and developing the resist layer in sections, so that a resist mask is obtained, through which sections of the dielectric layer are uncovered;

removing the dielectric layer in the sections which have been uncovered through the resist mask at least down to a depth which is such that the first layer is uncovered;

incinerating the resist mask in an oxygen plasma, the incineration being carried out at a temperature which is selected to be approximately 200°C or lower, and the oxygen plasma being generated from a gas which at least contains oxygen gas and a forming gas, the oxygen gas being present in an amount of approximately 60% or less by volume and the forming gas being present in an amount of approximately 40% or more by volume, so that a patterned dielectric layer is obtained; and

cleaning the patterned dielectric layer using aqueous dilute hydrofluoric acid.

2. The method of claim 1, wherein the duration of the step of incinerating the resist mask is selected to be between 30 s and 120 s.

3. The method of claim 1, wherein the oxygen partial pressure in the gas for generating the oxygen plasma is selected to be between 0.2 and 8.0 Torr.

4. The method of claim 1, wherein the forming gas at least contains nitrogen gas and hydrogen gas.

5. The method of claim 1, wherein the first layer is composed of silicon.

6. The method of claim 5, wherein the dielectric layer comprises at least one layer composed of a silicate glass and/or a silicon carbide.

7. The method of claim 1, wherein the aqueous dilute hydrofluoric acid has an HF/H_2O concentration of less than 1:400.

8. The method of claim 2, wherein the duration of the step of cleaning the patterned dielectric layer using dilute hydrofluoric acid is selected to be less than 60 seconds.

9. The method of claim 8, wherein the dilute hydrofluoric acid comprises a buffer salt.

10. The method of claim 1, wherein a wet-chemical clean is carried out after the resist mask has been incinerated.

11. A method for patterning a dielectric layer on a semiconductor substrate, comprising:

providing a first layer,

depositing a layer formed from a dielectric on the first layer, so that a dielectric layer is obtained;

depositing a photosensitive resist layer on the dielectric layer;

exposing and developing the resist layer in sections, so that a resist mask is obtained, through which sections of the dielectric layer are uncovered;

removing the dielectric layer in the sections which have been uncovered through the resist mask at least down to a depth which is such that the first layer is uncovered;

incinerating the resist mask in an oxygen plasma, the incineration being carried out at a temperature which is selected to be approximately 200°C or lower, and the oxygen plasma being generated from a gas which at least contains oxygen gas and a forming gas, so that a patterned dielectric layer is obtained; and

cleaning the patterned dielectric layer using aqueous dilute hydrofluoric acid.

12. The method of claim 11, wherein the duration of the step of incinerating the resist mask is selected to be between 30 s and 120 s.

13. The method of claim 11, wherein the oxygen partial pressure in the gas for generating the oxygen plasma is selected to be between 0.2 and 8.0 Torr.

14. The method of claim 11, wherein the forming gas at least contains nitrogen gas and hydrogen gas.

15. A method for patterning a dielectric layer on a semiconductor substrate, comprising:

providing a first layer,

depositing at least one layer formed from a dielectric on the first layer, so that a dielectric layer is obtained;

depositing a photosensitive resist layer on the dielectric layer;

exposing and developing the resist layer in sections, so that a resist mask is obtained, through which sections of the dielectric layer are uncovered;

removing the dielectric layer in the sections which have been uncovered through the resist mask at least down to a depth which is such that the first layer is uncovered; and

incinerating the resist mask in an oxygen plasma being generated from a gas which at least contains oxygen gas and a forming gas.

16. The method of claim 15, further comprising the step of cleaning the patterned dielectric layer using aqueous dilute hydrofluoric acid.

17. The method of claim 15, wherein the oxygen gas being present in an amount of approximately 60% or less by volume and the forming gas being present in an amount of approximately 40% or more by volume, so that a patterned dielectric layer is obtained.

18. The method of claim 17, wherein the oxygen partial pressure in the gas for generating the oxygen plasma is selected to be between 0.2 and 8.0 Torr.

19. The method of claim 17, wherein the forming gas at least contains nitrogen gas and hydrogen gas.

20. The method of claim 5, wherein the dielectric layer comprises at least one layer composed of a silicate glass and/or a silicon carbide.